3.0 Affected Environment

This section identifies existing conditions within the proposed project area for each resource discussed. Existing conditions are described for the study area encompassing the proposed federal action.

3.1 LAND USE

3.1.1 Land Use Plans and Policies

The proposed project is located in the County of San Bernardino, California, and traverses the unincorporated communities of Kelso and Cima. The County of San Bernardino is comprised of three regions – the Valley, Mountain, and Desert regions, each with its own distinct geographic and physical characteristics. For planning purposes these three regions are then further divided into eight sub-regions: West Valley, East Valley, Mountain, Victor Valley, Barstow, Baker, Morongo Basin, and Lower Colorado River. These eight sub-regions also make up the boundaries of the eight Regional Statistical Areas (RSAs) for the county. The proposed project is within the Desert sub-region in RSA 31. The majority of land in RSA 31 is publicly owned with a few parcels owned privately or by the state. Military installations within RSA 31 include George Air Force Base (near Adelanto and Victorville), Fort Irwin, the Marine Corps Supply and Logistics Center (near Barstow) and the Marine Corps Air-Ground Combat Center (Twentynine Palms), are all located several miles east and south of the proposed project (County of San Bernardino 1989).

The proposed project passes through the Preserve, a major constituent of RSA 31 public lands, and is therefore subject to the *Environmental Impact Statement / General Management Plan, Mojave National Preserve*: The plan identifies procedures and methods for managing land uses within the Preserve in such a manner as to protect natural, historic, scenic, cultural, recreational, and other resources and to provide for adequate visitor use. It defines the goals, standards, and programs against which possible consequences of granting the Special Use Permit must be evaluated.

3.1.2 Native American Lands

Native American peoples that have occupied or are now present within the vicinity of Preserve include Mojave, Shoshone, Paiute, Serrano, Chemehuevi, and Kawaiisu. These peoples are differentiated by language, subsistence patterns, and self-identification. Historically, tribal peoples occupied their lands in small social units of related families and traveled in regular patterns. These Native American peoples have altered their territorial ranges in response to European and American pressures and intertribal struggles over the past two centuries. During the 1950s and 1960s, Federal Indian Lands Claims cases involving Chemehuevi, Mojave, and Owens Valley Paiute tribes documented occupation and use of areas within or in the vicinity of Preserve. None of these tribal areas are located within the vicinity of the proposed project area (NPS 2000).

3.2 WILDERNESS AREA

A designated wilderness area is located immediately east of the UPRR corridor. This area is part of the Preserve, and is closed to motorized vehicles and certain other types of use. This area lies outside the proposed project and access roads.

3.3 GEOLOGY AND SOILS

Elevation near the Kelso Depot is approximately 2,200 feet above Mean Sea Level (MSL) and rises to approximately 4,125 feet above MSL near Cima. A constant increase in elevation, at an average 2.2 percent slope, occurs though the project area over a total length of 19 miles.

The general landform of the area is a series of incised alluvial fans on the west side of the Providence Mountains. Parent material from these mountains includes limestone, metamorphic rock, and granite. Surfaces include well-formed soils (on granite) to unconsolidated sediments on the lower alluvial fan areas. Large areas of desert pavement are present, most notably on the fans derived from the metamorphic rock.

Soils within the proposed project area consist almost entirely of loosely consolidated sandy desert alluvium. The alluvium has little to no topsoil, and is either barren or supports sparse xeric vegetation. Caliche, the naturally cemented alluvium often referred to as “hardpan”, may be encountered at shallow depths in some alluvial deposits.

The proposed project does not cross any agricultural fields or dry lake playas. There are no faults within the project area, and geologic hazards are low (County of San Bernardino General Plan, 1992).

3.4 WATER RESOURCES

The proposed project is located within the general watershed of the Mojave River, which is located more than 40 miles away. Groundwater is the source of water for desert springs, seeps, and to some extent ephemeral streams within the Preserve, but there are no springs, seeps, or ephemeral (much less perennial) streams within the proposed project area.

The proposed project is located within areas of well-drained, sandy alluvial slopes drained by numerous dry wash crossings, including Kelso Wash and Cedar Wash and their tributaries (Figure 2.1). Some of these dry washes experience occasional flash flooding during heavy storms, and existing dikes were constructed several years ago upslope of the railroad embankment to help control surface sheet-flow flooding. These washes eventually drain into Soda Lake. Although no systematic inventory of 100- and 500-year floodplains, or of wetlands has been conducted within the Preserve, the Kelso area has been determined to be within a 100-year floodplain.

The NPS Water Resources Division has determined that the proposed project is exempt from NPS Executive Order 11988 – Floodplain Management because there are no practicable alternatives to the location to the project as the railroad embankment is already in place and is wide enough to support the new second track.. NPS Special Directive 93-4 states under Section V, Subsection B that "This guideline does not apply to actions which are functionally dependent upon locations in proximity to water and for which non-floodplain sites are never a practicable alternative."

3.5 TRANSPORTATION

There are two major interstate highways that bracket but lie outside the Preserve: Interstate Highway 15 (I-15) and I-40, respectively located about 20 miles north and 20 miles south of the proposed project (Figure 1.1). I-15 carries the heaviest volume of daily traffic of any of the roads near or within the Preserve. Much of this traffic is people traveling from Los Angeles to Las Vegas. At times, traffic is routed through the Preserve on existing paved roads and back onto I-15 due to accidents, or other incidents.

There are six main paved entryways to the Preserve: Kelbaker Road, Cima Road, and Ivanpah Road off of I-15 on the north, Kelbaker Road and Essex Road off I-40, and Ivanpah Road off of Goffs Road on the south. These roads generally lead visitors north-south with the town of Kelso serving as a common point for four of these roads. These roads are currently maintained by the County of San Bernardino. Kelbaker Road between I-40, Kelso-Cima Road and Morning Star Mine Road receives the heaviest use, primarily on weekends when travelers are going to and from Las Vegas and Palm Springs.

Table 3.1 – 1999/2000 Traffic Count

Highway	Average Daily Traffic
Kelbaker Road, southbound off I-15	100
Cima Road, southbound off I-15	76
Ivanpah Road, southbound off Nipton Road	174
Kelbaker Road, northbound off I-40	183
Essex Road, northbound off I-40	31
Ivanpah Road, northbound off Goffs Road	21

Note: Numbers represent incoming vehicles only and are a mix of 1999 and 2000 data

Source: National Park Service, Mojave National Preserve Abbreviated Final Environmental Impact Statement and General Management Plan

The proposed project lies wholly within UPRR right-of-way. Kelso-Cima Road, the largest roadway within the project area, parallels the railroad on the west. Other roads include Kelbaker Road, near Kelso, Globe Mine Road, Cedar Canyon Road, and Cima Road, near Cima (Figure 2.1). The existing grade crossings at Cima Road, Cedar Canyon Road, and Globe Mine Road will be modified to accommodate the new second mainline.

3.6 AIR QUALITY

Sections 118 and 176 of the Clean Air Act require federal agencies and facilities to meet all federal, state, and local air pollution control laws and regulations.

California is geographically divided into 14 air basins for air quality management. These air basins are further divided into air quality management districts (AQMDs), which are county or regional governing authorities having primary responsibility for controlling air pollution sources.

The Mojave Desert Air Quality Management District manages and enforces the Clean Air Act's air quality standards in the Preserve.

AQMDs have established regulations governing fugitive emissions (i.e., wind blown dust) from sites temporarily disturbed during construction activities. The County of San Bernardino is a moderate, non-attainment area for PM_{10}[1], excluding the portion located in the Searles Valley Planning area, and the area in the South Coast Air Basin, which is designated as serious non-attainment. The Environmental Protection Agency classifies the Preserve as a non-attainment for ozone and PM_{10} standards. The Mojave Desert AQMD uses Rule 403-2, Fugitive Dust Control for the Mojave Desert Planning Area (adopted July 22, 1996) to regulate fugitive dust emissions in its air basin. The rule applies to construction and demolition, heavily traveled publicly maintained unpaved roads, weed suppression, limestone processing, and similar activities on NPS land. Construction and demolition activities require periodic watering, actions to prevent trackout onto paved surfaces, covering loaded haul vehicles on paved roads, stabilizing graded site surfaces, cleanup of trackout or spills on paved roads within 24 hours, and reduction of non-essential earthmoving activity under high-wind conditions.

The Statewide Registration Program establishes a uniform program to regulate portable engines and portable engine-driven equipment units. Once registered in the program, engines and equipment units can operate throughout the State of California without the need to get individual permits from local air districts. Local air districts enforce permitting, registering, and regulations set by the California Air Resources Board (ARB). The Statewide Portable Equipment Registration Program was adopted on March 27, 1997, by ARB. Owners and operators of portable engines and portable equipment units that meet the definitions and requirements of the program are eligible for registration. Portable engines include, but are not limited to, internal combustion engines in cranes, power generators, pumps, and service rigs.

To facilitate the Prevention of Significant Deterioration program established by Congress as part of the Clean Air Act, an area classification system was established. Class I areas receive the highest degree of protection with small kinds of additional air pollution allowed (sulfur dioxide and particulate matter). Class II areas allow moderate increases in certain pollutants and Class III areas allow a large amount of new air pollution. No Class III areas have been designated by Congress. The Preserve is classified as a Class II "floor" area, meaning it may never be designated as Class III.

According to the Preserve's General Management Plan, visibility is considered the most important air quality resource in the Preserve. Impacts to visibility occur from pollutants that may be from as far away as the San Joaquin Valley and the Los Angeles basin. Visibility is often affected by activities that generate dust. Existing sources of particulate matter in the project area include off-road vehicle traffic, windblown soil, mining operations, livestock grazing and agricultural activities. Nearby sources of emissions include Fort Irwin, Viceroy Mine near Searchlight, Nevada, the Mojave Generation Station near Laughlin, Nevada, Molycorp Mine and Stateline Power Generation Station near Primm, Nevada, and vehicular traffic on I-15 and I-40.

[1] Non-attainment areas are those areas that do not meet (or contribute to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant [US EPA, Title I, Part A, Section 107(d), as amended 1990]. PM_{10} is particulate matter with small particles less than 10 micrometers in diameter. EPA maintains a national air quality standard focused on PM_{10} to protect against coarse particle effects. Coarse particles are generally emitted from sources such as vehicles traveling on unpaved roads, materials handling, crushing and grinding operations and windblown dust (US EPA, Office of Air and Radiation, Office of Air Quality Planning and Standards, Fact Sheet, July 17, 1997).

3.7 NATURAL AMBIENT SOUND

The Preserve is generally a quiet landscape, with occasional, short term interruptions of the natural quiet. Depending on the atmospheric conditions, the closeness to a noise source, and topographic features, visitors generally experience little noise while in the backcountry. Occasional overflights of commercial jets at cruising altitudes, small private aircraft, and rare military jets at low altitudes may be heard. Vehicle noise is generally not an issue within the Preserve in spite of the nearby major roads (I-15, I-40, and major paved roads). Because of the Preserve's vastness, most areas are well away from traffic and its noise. Other areas where localized noise occurs are at the Rasor Open Area, adjacent to the western boundary of the Preserve, the UPRR and Burlington Northern Santa Fe rail lines, and mining operations. The UPRR lines are heavily used, but the faint distant rumble of freight trains is only occasionally audible when one is within a few miles of the tracks. (NPS, General Management Plan).

3.8 BIOLOGICAL RESOURCES

Under provisions of the federal Endangered Species Act of 1973, as amended (ESA) (16 U.S.C. Section 1531 *et seq*.), federal agencies are directed to conserve threatened and endangered (T&E) species and the habitats within which these species are found. In doing so, a federal agency must ensure that actions which it may authorize, fund, or carry out would be unlikely to jeopardize the continued existence or recovery of a species that is either listed or proposed for listing as threatened or endangered, or upon the designated critical habitat of said species. Accordingly, a Biological Assessment (BA) has been prepared to address potential impacts upon federally listed and proposed T&E species and their critical habitat. The BA was submitted to the USFWS for Section 7 consultation on May 29, 2001.

The BA for the proposed project was prepared in compliance with the 1973 ESA Section 7 regulations and in accordance with the procedures set forth in 1998 by the USFWS and National Marine Fisheries Service (NMFS). The BA focuses on federally listed T&E species and critical habitat that have been observed or which may be present within the proposed project area and near vicinity. In order to provide a complete biological technical report for reference in this EA, the BA also addresses California state-listed species and state and federal species of concern that do or may potentially occur within the same area are also addressed.

Section 3.8 and its subsidiary parts summarize information on existing conditions from the BA. Likewise, Section 4.8 addresses environmental consequences by summarizing findings presented in the BA.

3.8.1 Regional Setting/Vegetative Communities

The proposed project would traverse a range of floristic regions and habitat types within the Mojave Desert ecoregion, which encompasses approximately 80,000 square miles within portions of southeastern California, northwestern Arizona, southern Nevada, and southwestern Utah. Average annual rainfall within the Mojave Desert varies from one to five inches and is typically experienced in widely scattered areas as heavy rainfall from summer thunderstorms occurring at intervals of several years at any given location. Summer temperatures frequently exceed 100° Fahrenheit, while winter night frosts are common and snowfall occasional.

In the following portrayal of habitat types within the proposed project area, each is first defined in terms of vegetation community and then discussed with respect to spatial distribution in areas potentially subject to construction effects. Habitat typology is based on the Mojave Desert Ecosystem Program (MDEP), which employs the National Vegetation Classification System (NVCS) developed by the USGS Biological Resource Division. MDEP-NVCS categories are translated into the Holland Classification System, the one most commonly used within California, for vegetation community specification. The habitat types that are addressed either occur within a large proportion of the proposed project area, or occur uncommonly within that area but are considered sensitive. Sensitive habitats are defined as such by virtue of either supporting sensitive plant or animal species or having a very limited acreage of total occurrence.

The two major Mojave Desert vegetation communities that comprise most of the proposed project area are creosote bush scrub, and desert wash scrub. Joshua tree woodland, a sensitive habitat type, occurs along margins of the proposed project in certain reaches.

Creosote Bush Scrub. Creosote bush scrub is a dominant vegetation community on flat-to-sloping terrain, at elevations below 4,200 feet above MSL, and generally occurs on well-drained soils with low water-holding capacity. Hence, creosote bush scrub is generally found on slopes and alluvial fans, and in valleys. Dominant shrubs include creosote bush *(Larrea tridentata)* and bursage *(Ambrosia dumosa),* except on saline soils where saltbush (*Atriplex* spp.) replaces bursage as the co-dominant species. Vertical structural diversity is provided by the occasional to more common presence of Joshua tree *(Yucca brevifolia* var. *jaegeriana*) and Mohave yucca *(Yucca schidigera).*

Most of the proposed project area supports creosote bush scrub. Joshua trees are present in areas with an elevation exceeding approximately 2,600 feet above MSL, while low annual grasses and forbs dominate the herbaceous understory throughout the community's project extent. In scattered, generally lower elevation areas of windblown sand deposits, the density and diversity of herbaceous plant cover are notably increased (CCDCP, August 1995).

Desert Wash Scrub. Many washes in the Mojave Desert are incised channels, formed by periodic flooding from summer thunderstorms, and commonly support sparse vegetation typical of the desert wash scrub community. Most occurrences are at elevations lower than 5,000 feet above MSL within sandy arroyos, washes, and sub-irrigated bajadas. Dominant species include cat claw (*Acacia greggii*), desert willow *(Chilopsis linearis* ssp. *arcuata*), Mormon tea (*Ephedra* spp.), and indigo bush (*Psorothamnus arborescens*).

The proposed project would cross Kelso Wash, Cedar Wash, and several of their unnamed tributaries, all of which support desert wash scrub at low overall density. Within and adjacent to the proposed project area, these nearly vegetation-free sandy washes are associated with no alluvial wetlands or riparian species. (There are no streams, rivers, lakes, or wetlands at any location within the proposed project area.)

Joshua Tree Woodland. The Joshua tree *(Yucca brevifolia)* is endemic and restricted to the Mojave Desert, usually occurring at elevations of between 2,500 and 5,000 feet above MSL on gravelly alluvial slopes skirting mountains of the region. Within the Joshua tree woodland vegetation community, Joshua tree is the dominant and indicator species but may coexist with a wide variety of desert and desert-transitional species. Creosote is a common component of Joshua tree woodland in lower elevation areas, and Joshua tree woodland and creosote bush

scrub can intermingle or transition clinally. At higher elevations, Joshua tree may co-occur with saltbush, buckwheat (*Eriogonum*), burro bush, and Mormon tea. In desert-transitional zones along the western edge of the Mojave Desert, the Joshua tree is often present in pinyon-juniper woodland, but Joshua tree woodland is relatively rare.

Joshua tree woodland is present along the margins and outside of the proposed project area at higher elevation locations near Cima, where vegetation within the UPRR right-of-way corridor has been severely impacted by past fire control, construction, and track and bridge/culvert maintenance activities. In result, probable former Joshua tree woodland within the corridor is now a stand of mixed shrubs with isolated Joshua trees.

3.8.2 Wildlife

The Preserve supports 36 species of reptiles, 206 species of birds, and 47 species of mammals (NPS 2000). Some of the more notable species known to occur within the Preserve but not observed in or adjacent to the project corridor include Mojave green rattlesnake, Mojave fringe-toed lizard, regal ring-necked snake, desert striped whipsnake, prairie falcon, Bendire's thrasher, California thrasher, gray vireo, golden eagle, Lucy's warbler, mourning dove, Gambel's quail, rock squirrel, dusky-footed woodrat, mule deer, porcupine, mountain lion, desert bighorn sheep, domestic cattle, and various rodent and bat species.

Wildlife species observed in or adjacent to the project corridor during desert tortoise field surveys include Desert tortoise *(Gopherus agassizii),* Antelope squirrel *(Ammospermophilus leucurus leucurus),* Black whiptail lizard *(Cnemidophorus tigris tigris),* Grey throated fly catcher *(Myiarchus cinerascens),* Tarantula hawk *(Hemipepsis ustulata),* Yellow butterfly *(Unknown),* Zebra tailed lizard *(Calissaurus draconoides),* Cottontail rabbit *(Sylvilagus auduboni arizonae),* Jack rabbit *(Lepus califonicus),* Trap door spider *(Aptostichus schlingeri),* Yellow king bird *(Tyrannus verticalis),* Desert iguana *(Dipsosaurus dorsalis),* Raven *(Corvus corax),* Tarantula wasp *(Hemipepsis ustulata),* Red racer *(Masticophis flagellum piceus),* Rock dove *(Columbia livia),* Cactus wren *(Campylorhynchus brunneicapillus),* Praying mantis *(Tenodera sinensis),* and the Side-blotched lizard *(Uta stansburiana).* Signs of burros were also noted.

3.8.3 Sensitive Species

The proposed project area includes potentially suitable habitat for certain federally listed threatened and endangered wildlife and plant species and species of special concern. Information regarding these species and their suitable habitat, along with a determination of potential project impacts, is detailed in the Biological Assessment, from which the following is abstracted.

A list of T&E species potentially occurring within the proposed project area was developed through background research and field studies. Sources consulted for background data on species' biology, habitat, range, and location of recorded occurrences include USFWS, CDFG, CNDDB, Bureau of Land Management (BLM), NPS, California Native Plant Society (CNPS), University of California at Berkeley CalFlora database, the Revised Draft Environmental Impact Statement and General Management Plan for Mojave National Preserve (NPS 2000), and various other publications listed in Section 7.0 of the BA.

Federal Threatened and Endangered Wildlife Species

Six federal T&E wildlife species are reported as potentially occurring in the proposed project area, based on information provided by the USFWS, CDFG, CNDDB, NPS, and BLM. The following federal T&E species have been reported to potentially occur in or near the proposed project area.

- Mohave tui chub *(Gila bicolor mohavensis)*
- Arroyo southwestern toad *(Bufo microscaphus californicus)*
- California red-legged frog *(Rana aurora draytonii)*
- Desert tortoise *(Gopherus agassizii)*
- Southwestern willow flycatcher *(Empidonax traillii extimus)*
- Least Bell's vireo *(Vireo bellii pusillus)*

According to information from the Revised Draft Environmental Impact Statement and General Management Plan for Mojave National Preserve (NPS 2000), all but one of these species would have little or no probability of occurring within the proposed project area due to a paucity or lack of suitable habitat. The only federal T&E wildlife species identified as occurring within the USGS 7.5-minute quadrangles (Kelso, Hayden and Cima) traversed by the proposed project is the desert tortoise, which is also the sole member of the foregoing list to be observed during the field studies.

The desert tortoise is an herbivorous chelonian that can grow up to 15 inches in total carapace (shell) length. Desert tortoises spend the majority of their lives in or near burrows, emerging to feed and mate during late winter and early spring. This species typically remains active throughout the spring, and sometimes emerges again after summer storms. Burrows are dug with the forelimbs, and the females use their hind limbs to dig nests, usually near or at the entrance to their burrows. Both the male and female have a gular horn. However the male's gular horn is longer and turned upward. The elongated gular horn may be used to flip other males on their backs during combat.

Desert tortoises grow at varying rates, depending on water and food supply. Sexual maturity is a function of size rather than age. Courtship and copulation occur while the desert tortoise is above ground, typically during late summer and early fall. Females store the sperm and lay four to eight ping pong-ball-sized eggs between May and July. Nests are typically dug in or near the entrance of the burrow or under nearby shrubs. Incubation periods are usually 90 to 120 days.

During periods of activity, desert tortoises eat a wide variety of herbaceous plants, particularly grasses and the flowers of annual forbs (Berry, 1984; Luckenbach, 1982). The desert tortoise diet composition changes within its range. If winter rainfall has resulted in a successful germination of annuals, the tortoise will rely heavily on these when it emerges from its winter brumation. The diet also includes select shrubs and the new growth of cacti and their flowers. Desert tortoises are essentially "K-strategists" (MacArthur and Wilson, 1967) with delayed maturity and a relatively long life. Adult tortoises are well protected against most predators (aside from humans) and other environmental hazards. Their longevity helps compensate for their variable annual reproductive success, which is correlated with environmental conditions.

Desert tortoises are well adapted to living in a highly variable and often harsh environment. This species thrives where the ground temperature may exceed 140°F. They retreat to burrows or dens during periods of adverse weather conditions. While in the den, they reduce their metabolism through passive cooling and loss of water. Adult desert tortoises lose water at such a slow rate that they can survive for more than a year without drinking. The ability to tolerate large imbalances in water and energy enables tortoises to survive lean years and exploit resources that are only periodically available. Desert tortoises are able to balance their water budgets and conserve energy during periods of above-average precipitation.

The desert tortoise inhabits a wide range of habitats in the Mojave and Sonoran deserts. In the Mojave Desert, optimal habitat for the desert tortoise includes creosote-bursage flats, basins, and bajadas. The greatest density of tortoises occurs in contiguous creosote bush communities with light gravel to sandy soil and Joshua tree woodlands. Mojave Desert creosote bush scrub habitat occurs at elevations below 4,200 feet above MSL in flat to sloping terrain that includes creosote bush and bursage, except on saline soils where saltbush replaces bursage as the co-dominant species. Desert tortoises are found throughout the California desert from below sea level to an elevation of 7,300 feet above MSL, but the most favorable habitat occurs at elevations of approximately 1,000 to 3,000 feet above MSL.

Threats to the desert tortoise include off-highway vehicle activity, illegal collection and hunting, habitat loss, predation on young by ravens, and upper respiratory tract disease.

The current range of the desert tortoise extends across the Mojave Desert throughout the southeastern part of California, the southern tip of Nevada, western Arizona, and the extreme southwestern corner of Utah. More specifically, specimens are found in the Mojave Desert and uplands east of the Salton Sea, including portions of southern Inyo, San Bernardino, Kern, Riverside and Imperial counties

Most of the Mojave Desert east of the San Bernardino Mountains is considered desert tortoise habitat. Within the region, several areas have been designated critical habitat for the desert tortoise.

The project corridor lies within USFWS designated Critical Habitat for the desert tortoise. On August 4, 1989, the USFWS emergency-listed the desert tortoise as a federally endangered species and on April 2, 1990, finally listed the tortoise as threatened (CCDCP, Aug 1995). At that time, the tortoise was afforded full protection under the Endangered Species Act of 1973 (ESA), as amended. This protection prohibits any “taking” of the species. The term “take” means to harass, harm, pursue, hunt, shoot, kill, trap, capture, or collect, or to attempt to engage in any such conduct (ESA Section 3[19]). An act also constitutes a “take” if it may significantly disrupt or impair normal behavioral patterns of the species, which include, but are not limited to, breeding, feeding, or sheltering (50 CFR 17.3).

The desert tortoise is a protected species within San Bernardino County, California. Prior to site alteration in areas where the tortoise may exist, a survey for desert tortoise must be completed to determine the population status.

The surveys for the Proposed Action were conducted in two distinct segments, the west and east side of the existing UPRR tracks.

Survey Methods

HDR biologists conducted the desert tortoise focused survey between April and August 1999. The purpose of the survey was to determine the relative density of desert tortoises within and adjacent to the proposed project area. The right of way ranges in width from 25 ft to 100 ft from the tracks on both sides, and the project area of study runs from railroad mile 236.13 to mile 254.64. All washes and banks were surveyed with 100% coverage for indication of tortoise activity within and adjacent to the proposed project area. Vegetation and signs and sightings of wildlife activity were logged during the field survey.

The west side survey area is bounded by Kelso-Cima road and the existing tracks. This is the area where most of the disturbance due to the Proposed Action would occur and is referred to as the west side (of the existing tracks). The technique used in identifying tortoises and tortoise sign is used by BLM and recommended by USFWS, and consists of walking transects approximately 30 feet apart.

The east side survey area is the area to the east of the existing tracks. For ease of reporting, the east side survey was broken up into six transects or sections, with each transect running parallel to the existing rail alignment. The first transect was located within the right of way approximately 50–feet from the tracks. The additional transects were measured from the eastern edge of the UPRR right of way in increments of 100, 300, 600, 1,200, and 2,400 feet. The survey was conducted by breaking each transect into individual one-mile segments. Biologists familiar with this area walked each one-mile segment per USFWS desert tortoise survey protocol, observing approximately 30 feet on either side of the walked transect.

Background information including; geologic landform, vegetation, soil type, land use, weather data, sign of human and wildlife activity were collected in both west and east side surveys. Photographs were taken of live tortoises, dens/burrows occupied by live tortoises, and any shell remnants identified during each transect survey. Photographs were also taken at the beginning of each mile of transect looking northeast up the transect.

West Side Survey Results

Results of the pedestrian survey revealed several collapsed and/or abandoned burrows that may have been previously used by tortoises, but no signs of recent tortoise activity were evident (i.e. scat, eggshells, tracks, mating rings, etc.). Occurrence of these burrows averaged less than 1 per railroad mile. Human disturbance may contribute to the lack of tortoise activity within this area. Frequent human activity was evident by presence of dumpsites, scattered trash, ammunition casings, off-road driving, and blading.

Frequent human activity in the right of way due to railroad maintenance activities and the close proximity of Kelso-Cima road may be one factor for “very low relative desert tortoise density” results in the west side survey area. Potential desert tortoise predators that were noted in the project area or that are common to project area include: Coyote (*Canis latrans*), kitfox (*Vulpes macrotis*), badger (*Taxidea taxus*), common raven (*Corvus corax*), roadrunner (*Geococcyx californianus*), and red-tailed hawk (*Buteo jamaicensis*).

During the survey days, the air temperature, as well as surface temperature, ranged from 60 to 70 degrees Fahrenheit. Wind speed averaged 35 miles per hour, cloud coverage averaged 40 percent, and no rainfall occurred on the survey days. Soils consisted of sand and gravel and blow

sand. Frequent human activity in the right of way was evident throughout the entire length of the project area.

East Side Survey Results

Desert tortoise survey results from each transect of the project site are described below. A transect location map is included as figure 3.1.

Transect R (Union Pacific right-of-way): The right of way transect, beginning at railroad mile (mile) 236.5, Kelso to 253.0, Cima was surveyed on August 4 through August 6. Air temperature ranged from to 102 to 75 degrees Fahrenheit. Surface temperature ranged from 75 to 112 degrees Fahrenheit. Wind speed ranged from calm to 30 miles per hour. Cloud cover ranged from 0 to 10 percent cover. No rainfall occurred during the survey of this transect.

Transect R occupies a highly disturbed creosote bush scrub habitat. Due in part to the level of disturbance, a greater variety of plant species were observed within this transect when compared with the other transects. Average height of shrub community was approximately four to five feet.

Observed wildlife usage of the right of way included signs and visual sightings of numerous small mammal, lizard, bird, butterfly, rabbit, and insect species.

The right of way contains an access road and numerous levees and washes. Levees have been constructed to protect the rail line from erosion damage during rainstorm events. Due to the high level of human activity within the UPRR right of way, frequent and persistent trash was observed. Discarded items include numerous railroad maintenance parts and equipment, cardboard boxes, plastic bottles, wood, and various automotive parts. The discarded cardboard boxes are the remnants of the frequent rail robbery activity in the area.

Numerous burrows were discovered throughout the right of way transect, which were once used by tortoise, kit fox, or other burrowing animals. Most burrows were partially collapsed or had no current sign of wildlife activity.

One adult tortoise was found moving south along the western edge of UPRR right of way access road near mile 243.1. The tortoise appeared to be in good health and with no obvious signs of upper respiratory disease (URTD).

A desert tortoise shell, three-inches by two inches, was found near mile 245.9. The shell was intact with no evidence of predation by ravens. No other sign of tortoise were noted in the immediate area.

A four-inch base active burrow with fresh scat was discovered near mile 244.35 on the west side of right of way access road.

Transect 1S (100 feet east of UPRR right of way): Transect 1S, beginning at mile 236.5, Kelso to 252.5, near Cima was surveyed on July 14 through July 17. Portions of this transect parallel to existing double track were not surveyed during this project. The decision to exclude the double track sections is based on the project footprint remaining unchanged where double track already exists. Air and surface temperature ranged from 82 to 105 degrees Fahrenheit. Wind speed ranged from calm to 15 miles per hour. Cloud cover ranged from 0 to 50 percent cover. The area experienced thunderstorms on the nights of July 14 – July 16. Significant rainfall fell during these events as evidenced by debris flow in washes the next morning.

Transect 1S occupies a creosote bush scrub habitat. The upper reach, mile 244 through 253, is dominated by creosote mottled with Joshua tree and Spanish dagger stands. Creosote plants averaged approximately three to five feet in height through this transect.

Observed wildlife usage included signs and visual sightings of numerous small mammal, lizard, bird, butterfly, rabbit, and insect species.

Frequent evidence of free-range cattle and horse/burro activity was identified from approximately mile 245 to 250.

Due to the high level of human activity near Transect 1S, frequent and persistent trash was discovered. The frequency was higher from mile 236.5 and 243 and near Cedar Canyon Road. Discarded items included numerous railroad maintenance parts and equipment, cardboard boxes, bottles, cans, and anthropogenic trash. The discarded cardboard boxes are the remnants of the frequent rail robbery activity in the area. North of mile 244 generally contains little trash.

Numerous burrows were discovered throughout Transect 1S, which were once used by tortoise, kit fox, or other burrowing animals. Most burrows were partially collapsed or had no current sign of wildlife activity.

One active burrow, containing a live adult tortoise was found near mile 240. The burrow was located under a creosote plant.

Two burrows located within mile 242 appeared to be active. One burrow contained semi-fresh scat and the other contained fresh sign of shell imprints. The shell imprints are assumed to be recent due to the amount and frequency of thunderstorms and rain during the survey period.

Four desert tortoise shells were discovered in Transect 1S. An eight-inch female shell was found near mile 237.5. Near mile 240 a female, approximately ten-inch carapace length, was found. A male shell, approximately ten-inch carapace length, was discovered near mile 244.5. The fourth shell, an eleven-inch carapace male shell was located near mile 252.

Transect 2S (300 feet east of UPRR right of way): Transect 2S; beginning at RR mile 236.5, Kelso to 252.5, near Cima was surveyed on July 14 through July 17. Portions of this transect parallel to existing double track were not surveyed during this project. The decision to exclude the double track sections is based on the project footprint remaining unchanged where double track exists. Air and surface temperature ranged from 85 to 107 degrees Fahrenheit. Wind speed ranged from calm to 15 miles per hour. Cloud cover ranged from 0 to 50 percent cover. The area experienced thunderstorms on the nights of July 14 – July 16. Significant rainfall fell during these events as evidenced by debris flow in washes the next morning.

Transect 2S occupies a creosote bush scrub habitat. The upper reach, mile 244 through 253, is dominated by creosote mottled with Joshua tree and Spanish dagger stands. Creosote plants averaged approximately three to five feet in height through this transect, with the exception of mile 246.3 through 246.8, which averaged approximately seven feet in height.

Observed wildlife usage included signs and visual sightings of numerous small mammal, lizard, bird, butterfly, rabbit, snake, and insect species. Deer and coyote sign were also identified during the survey.

Frequent evidence of free-range cattle and horse/burro activity was identified from approximate mile 245 to 250.

Due to the high level of human activity near Transect 2S, frequent and persistent trash was discovered. The frequency was higher from mile 236.5 and 243 and near Cedar Canyon Road. Discarded items include; cardboard boxes, wood, plastic pipe bottles, cans, and anthropogenic trash. The discarded cardboard boxes are the remnants of the frequent rail robbery activity in the area. North of mile 244 generally contains little trash.

Numerous burrows were discovered throughout Transect 2S, which were once used by tortoise, kit fox, or other burrowing animals. The majority of burrows were partially collapsed, collapsed, or had no current sign of wildlife activity.

Two occupied burrows were identified in this transect. An occupied eight-inch base width burrow was found under a creosote plant near mile 237.4. Due to depth of burrow, determination of gender was not possible. A second occupied burrow was identified near mile 237.85. This burrow was in an open area, measuring six inches at the base. Gender determination was not possible.

Six active burrow/dens were observed during the survey, including a ten-inch base width near mile 237.2, an eight-inch base width near mile 237.45, a three-inch base width near mile 239.4, a six-inch base near mile 246, and a four-inch base width near mile 247. The sixth burrow was an eight-inch base width burrow in the side of a levee with old scat and tracks observed near mile 241.6. All appeared to be unoccupied yet recently used.

Three inactive burrows were identified during the survey. A twelve-inch base width burrow was found near mile 237.5. Near mile 243.7, a six-inch base width burrow was identified. The six-inch burrow was located in the side of a levee with old scat.

Five shell or shell fragment sites were located during the survey. A nine-inch female shell near mile 237.5, a twelve-inch partial male shell near mile 242.7, shell fragments near mile 244.6, an eight-inch female shell near mile 245.4, and a five-inch partial shell near mile 245.5.

Transect 3S (600 feet east of UPRR right of way): Transect 3S, beginning at RR mile 236.5, Kelso to 252.5, near Cima was surveyed on July 14, July 15, July 20, July 21, and August 4. Portions of this transect parallel to existing double track were not surveyed during this project. The decision to exclude the double track sections is based on the project footprint remaining unchanged where double track already exists. Air temperature ranged from 85 to 105 degrees Fahrenheit. Surface temperature ranged from 85 to 110 degrees Fahrenheit. Wind speed ranged from calm to 25 miles per hour. Cloud cover ranged from 0 to 15 percent cover. The area experienced thunderstorms on the nights of July 14 and July 15. Significant rainfall fell during these events as evidenced by debris flow in washes the next morning.

Transect 3S occupies a creosote bush scrub habitat. The upper reach, mile 244 through 253, is dominated by creosote mottled with Joshua tree and Spanish dagger stands. Creosote plants averaged approximately three to five feet in height through this transect.

Observed wildlife usage included signs and visual sightings of numerous small mammal, lizard, bird, butterfly, rabbit, and insect species. Deer and coyote sign were also identified during the survey.

Frequent evidence of free-range cattle and horse/burro activity was identified from approximate mile 245 to 250.

Evidence of human activity in Transect 3S was much less than the first three transects. Occasional paper, tin cans, and bottles were found along this transect. The frequency was higher near Cedar Canyon Road.

Numerous burrows were discovered throughout Transect 3S, which were once used by tortoise, kit fox, or other burrowing animals. The majority of burrows were partially collapsed, collapsed, or had no current sign of wildlife activity. Two pellets of tortoise scat were discovered under a recently foraged upon beavertail cactus plant. It was assumed that a tortoise had been feeding when it dropped the scat.

One adult male tortoise, approximately twelve-inch carapace length, was found in a wash under a pencil cholla near mile 238.0. Heavy rain fell the previous night, which may have brought the tortoise out for water and /or forage. The tortoise appeared to be healthy and with no obvious signs of URTD.

Two occupied burrows were located in this transect. A northwest facing ten-inch base width occupied burrow was found under a creosote plant near mile 240.35. Determination of gender was not possible. Another south facing occupied burrow was located under an ambrosia plant near mile 245.65. Determination of gender was not possible.

Three active burrows were observed during this survey, including a seven-inch base width burrow with scat near mile 236.0. A five-inch base width burrow was found near mile 238.0. Another active ten-inch base width burrow was found near mile 239.0. All burrows appeared to be recently used, yet currently unoccupied.

Five shell or shell fragment sites were discovered during the survey. A shell fragment site was found near mile 239.85. A ten-inch adult female shell was discovered near RR mile 240.85. Female shell fragments were found near mile 244.6. An eight-inch female shell was discovered in an opening near mile 245.1. Female shell fragments were found resting in the center of a small creosote plant. It appears the shell fragments may have been washed up into the plant during a storm event.

Transect 4S (1,200 feet east of UPRR right of way): Transect 4S, beginning at RR mile 236.5, Kelso to 252.5, near Cima was surveyed on July 17, July 19, July 20, and July 21. Portions of this transect parallel to existing double track were not surveyed during this project. The decision to exclude the double track sections is based on the project footprint remaining unchanged where double track already exists. Air temperature ranged from 82 to 101 degrees Fahrenheit. Surface temperature ranged from 87 to 120 degrees Fahrenheit. Wind speed ranged from calm to 10 miles per hour. Cloud cover averaged 0 percent cover. No measurable rainfall was recorded during the survey of this transect.

Transect 4S occupies a creosote bush scrub habitat with frequent Spanish dagger and Joshua tree stands throughout. Creosote plants were generally much more sparse than previous transects and averaged approximately three feet in height.

Observed wildlife usage included signs and visual sightings of numerous small mammal, lizard, bird, butterfly, rabbit, and insect species. Coyote burrow and sign were also identified during the survey.

Frequent evidence of free-range cattle and horse/burro activity was identified from approximately mile 245 to 250.

Evidence of human activity in Transect 4S was minimal. Occasional paper, tin cans, and bottles were found throughout transect. The frequency was higher near Cedar Canyon Road.

Less frequent burrow activity was observed during the survey of Transect 4S. Burrows discovered throughout Transect 4S, were predominately used by small rodent, lizard or other burrowing animals. Numerous collapsed tortoise burrows were observed. A single collapsed burrow near mile 245.0 with scat was identified. Recent pellets of tortoise scat were discovered under a beavertail cactus plant. It was assumed that a tortoise had been foraging on the beavertail when it dropped the scat.

Four intact tortoise shells and two shell fragment sites were located during the transect survey. An eight-inch female shell was found in a desert pavement area near mile 237.35. Another eight-inch female shell found in an open area under an ambrosia plant near mile 240.15. Two six-inch female shells were found in open areas at miles 241.5 and 244.8. Shell fragment sites were observed near mile 241.75 and 243.9. There was a noticeable decline in tortoise sign and activities observed within this transect.

Transect 5S (2,400 feet east of UPRR right of way): Transect 5S, beginning at RR mile 236.5, Kelso to 252.5, near Cima was surveyed on July 19, July 21, August 4, and August 5. Portions of this transect parallel to existing double track were not surveyed during this project. The decision to exclude the double track sections is based on the project footprint remaining unchanged where double track already exists. Air temperature ranged from 82 to 101 degrees Fahrenheit. Surface temperature ranged from 82 to 103 degrees Fahrenheit. Wind speed ranged from calm to 25 miles per hour. Cloud cover ranged between 0 and 5 percent cover. No measurable rainfall was recorded during the survey of this transect.

Transect 5S occupies a creosote bush scrub habitat with frequent Spanish dagger and Joshua tree stands throughout. The distribution of creosote plants was generally equal to Transect 4S. Average plant height was approximately three to five feet.

Observed wildlife usage included signs and visual sightings of numerous small mammal, lizard, bird, butterfly, rabbit, and insect species. Numerous kit fox burrows and sign were also identified during the survey.

Frequent evidence of free-range cattle and horse/burro activity was identified from approximately mile 245 to 250.

Evidence of human activity in Transect 5S was minimal. Occasional paper, tin cans, bottles, and wire were found throughout transect. The frequency was higher near Cedar Canyon Road.

The frequency of burrowing activity observed was greater than Transect 4S and typical of the first three transects. Burrows discovered throughout Transect 5S, were predominately used by small rodent, lizard or other burrowing animals. The majority of burrows were partially collapsed, collapsed, or had no sign of current wildlife activity.

Three active, non-occupied, burrows were located during the survey. A seven-inch base width burrow with scat near mile 237.7, an undetermined size burrow near mile 240.15, and an eight-inch base width burrow near mile 251.2 were observed.

Four adult shells and two sites of tortoise shell fragments were identified. A five-inch male shell was found near mile 239.25 in an open area between creosote plants. One eight-inch female shell, near mile 246.3, a nine-inch female shell near 248.0, and a ten-inch female shell near mile 252.75 were observed. The ten-inch female was discovered in a steep (greater than ten-percent slope) wash. Fragment sites were discovered near miles 240.2 and 240.7. The latter fragments appeared to be an adult male.

Summary

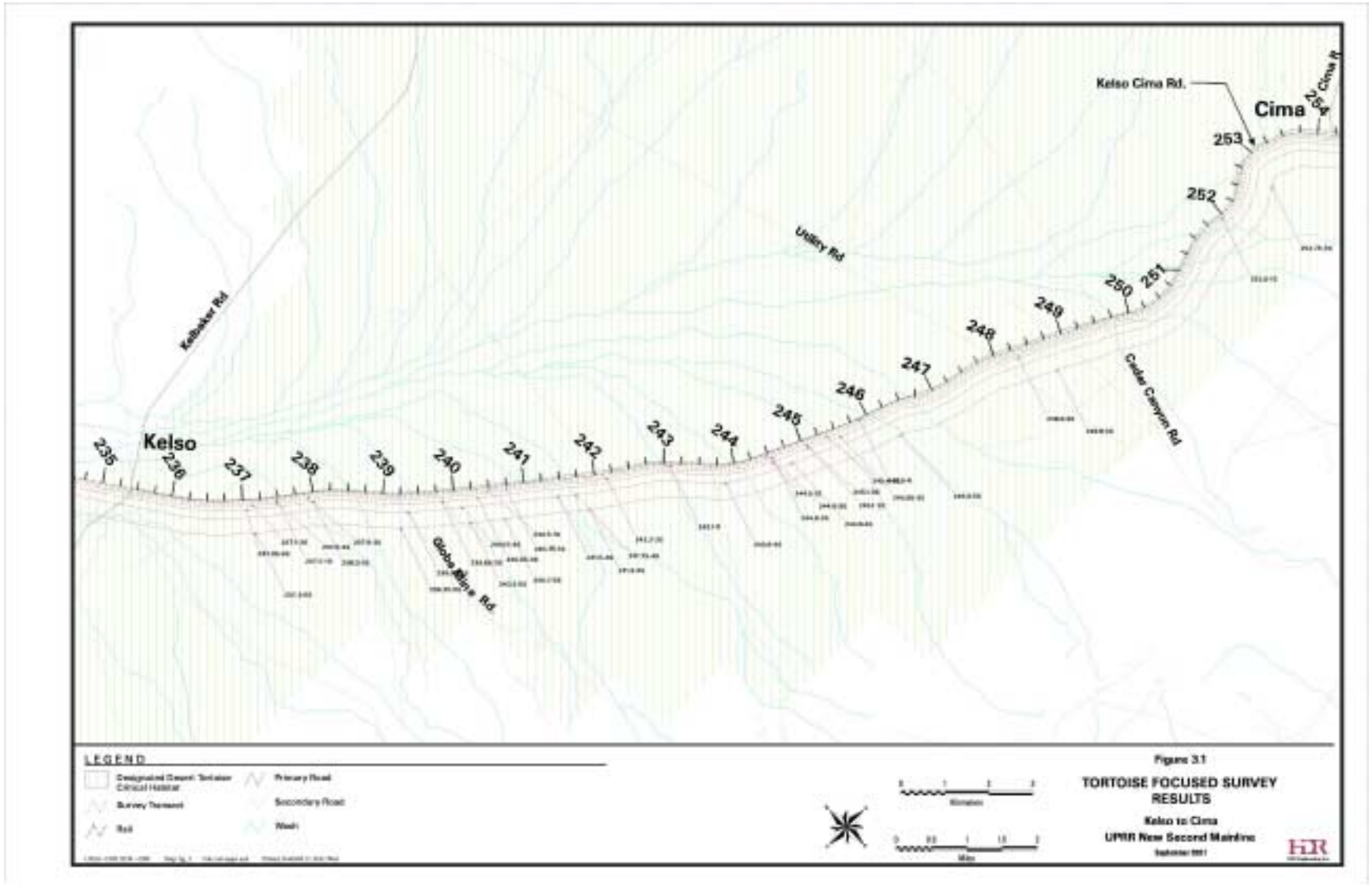
West side: The entire west side survey area exhibited a similar activity level and variety of observed wildlife. It is noted that a high frequency and presence of human activity was observed. The amount of human activity appears to correspond to the proximity of the rail line and Kelso-Cima Road and their associated activities. Burrowing wildlife activity appeared to be numerous and active.

Tortoise presence and activity was observed to be virtually non-existent. The survey revealed a few collapsed and/or abandoned burrows and no additional tortoise sign.

East side: All of the east side survey transects exhibited a similar activity level and variety of observed wildlife. It is noted that transects R, 1S, and 2S exhibited a high frequency and presence of human activity. The amount of human activity appears to correspond to the proximity of the rail line and its associated activities. Human presence in transects 3S, 4S, and 5S was observed to be minimal with the exception of where each transect crossed Cedar Canyon Road. Common to all transects outside of the UPRR right of way, was the frequent sign of free-range livestock activity. The presence of cattle appeared to be higher from mile 245 through mile 250. Burrowing wildlife activity in all transects, with the exception of R and 4S, appeared to be numerous and very active. Transect R and 4S exhibited a much lower frequency of observed burrows. The lower activity could possibly be attributed to the presence of frequent human activity in the right of way and a change in soil and geologic conditions in 4S.

Tortoise presence and activity was observed to have a relatively even distribution across all transects. Sign of tortoise activity in Transect R included one live tortoise, one shell and one active burrow. In Transect 1S, three active burrows and four tortoise shell and/or shell fragment locations were observed. Tortoise sign in 2S included two occupied burrows, six active burrows, three inactive burrows, and five shell and/or shell fragment locations. In Transect 3S, one live tortoise, two occupied burrows, three active burrows, and 5 shell and/or shell fragment locations were observed. One active burrow and four shell and/or shell fragment locations were observed in Transect 4S. Tortoise sign observed in Transect 5S included three active burrows, and four shell and/or shell fragment locations.

Figure 3.1 – Tortoise Focused Survey Results



Federal Threatened and Endangered Plant Species

The list of federal T&E plant species that might occur within or near the project area was gathered from the USFWS, NPS, BLM, CDFG, CNDDB, and CalFlora. Using these sources, the following two federal T&E plant species were identified as potentially occurring in the project area:

- Gambel's watercress (*Rorippa gambelii*)
- Marsh sandwort (*Arenaria paludicola*)

The proposed project area does not contain marsh habitat suitable for these two species. As such they were determined absent from proposed project area.

Wildlife and Plant Species of Concern

In addition to federally listed T&E species, the BA addresses federal species of concern and California-listed rare, endangered, and threatened species because the present EA may be reviewed under resource protection regulations other than NEPA.

Information regarding these species was compiled from the USFWS, BLM, CDFG, NPS, and CNPS sources, along with various field guides and other technical references, and communication with local experts (included in Section 7.0, Bibliography). The following federal species of concern or California-listed rare, endangered, or threatened species were identified as potentially occurring within the project area, but none was observed during the field studies.

- Southwestern pond turtle (*Clemmys marmorata pallida*)
- Two-striped garter snake (*Thamnophis hammondii*)
- Cooper's hawk (*Accipiter cooperii*)
- Swainson's hawk (*Buteo swainsonia*)
- Prairie falcon (*Falco mexicanus*)
- Burrowing owl (*Athene cunicularia*)
- Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)
- LeConte's thrasher (*Toxostoma lecontei*)
- Bendire's thrasher (*Toxostoma bendirei*)
- Nelson's bighorn sheep (*Ovis canadensis nelsoni*)
- Cima milk-vetch (*Astragalus cimae* var. *cimae*)
- Red grama (*Bouteloua trifida*)
- Sand linanthus (*Linanthus arenicola*)
- Spearleaf (*Matelea parvifolia*)

- Curved-spine beavertail (*Opuntia curvospina*)

3.9 PALEONTOLOGICAL RESOURCES

The Preserve contains a diverse paleontological record. Exposure of geological features supports notable exposure of fossils. These fossils have value as "(1) stratigraphic indicators for correlation of deposits containing them and for determination of relative geologic age; (2) records of past life forms showing the course of evolutionary trends of plants and animals; and (3) evidence of changing paleoenvironments." (NPS, 1997).

Paleontological resources within the project area vicinity were identified with the use of available resources at the San Bernardino Natural History Museum Paleontology Department. Locations of paleontological resource localities are determined by the presence of fossil material documented on USGS 7.5-minute quadrangle maps in the project vicinity (Kelso, Cima and Hayden). These localities represent the documented presence of fossil material or features in the soil or rock where previous studies have been performed. Based on a review of this data in an area ranging from one mile to one and one half mile wide, no paleontological resources were identified within the proposed project area.

3.10 CULTURAL RESOURCES

The National Historic Preservation Act of 1966, as amended (NHPA), together with its implementing regulations (36 CFR Part 800), requires that federal agencies consider the effects that their undertakings may have on "historic properties." These are districts, sites, buildings, structures, or objects that are included, or eligible for inclusion within the National Register of Historic Places (NRHP). The currently proposed project requires prior approval and issuance by the NPS of a Special Use Permit for the right to use roads within the Preserve in order to access the project, which is an "undertaking" subject to the NHPA.

Cultural resource sites that could be affected by the proposed action were identified through a record search of prior studies and cultural resource site forms on file with the Archaeological Information Center at the San Bernardino County Museum, and through two pedestrian surveys of the UPRR right-of-way corridor. The first survey was performed by HDR and a subcontractor, James and Briggs Archaeological Services, from mid- to late 1999 for a proposed Level (3) Communications fiber optic project alternative route within UPRR right-of-way between Las Vegas, Nevada, and Cajon Pass in California. This survey was focused west of the tracks, "west" indicating locations situated on the left-hand side of the tracks in procession from Kelso to Cima. The second survey, which focused east of the tracks, was conducted under a NPS Research Permit (NRSP 0061-00) in March 2000. HDR personnel, and James & Briggs personnel from the first survey performed this second survey.

The present study's survey area was defined as the full width of the existing UPRR right-of-way corridor for the 19-mile length of the proposed project. The Area of Potential Effect (APE) as thus defined is continuous, except that the non-project town of Kelso separates a small reach to the south from the remainder to the north. The existing UPRR right-of-way limits are generally situated 100 feet out from each side of the existing railroad tracks, although the corridor width varies up to about 400 feet at Cima. The footprint of the proposed project, in terms of construction activities and with respect to the new facilities, is considerably smaller than the

surveyed corridor. However, the APE was operationally defined as comprising the full corridor width in order to facilitate the analysis of possible indirect effects.

All previously recorded and newly discovered cultural resource locations within the UPRR right-of-way corridor were closely examined, photographed, and mapped on large-format engineering plan sheets and 7.5-Minute USGS quadrangle (topographic) maps. Site size and condition, and any cultural materials present were noted. All existing railroad bridges and culverts were photographed and keyed to the design plans. Field-level data were recorded using the standard California Department of Parks and Recreation forms. Each site identified within the survey area was evaluated with regard to NRHP status as being either listed or eligible for listing. Unlisted sites were evaluated using the criteria provided at 36 CFR 60.4.

All of this data was compiled into a report titled "Cultural Resources Survey Union Pacific Railroad New Second Mainline" and submitted to the California State Office of Historical Preservation on August 31, 2000. They concurred with the determination that the proposed project will result in no adverse effects on cultural resources by letter dated October 10, 2000.

The APE of the proposed project was found to contain portions of three sites, which are described and evaluated, below. The portion of site CA-SBR-1910H that lies within the APE is not considered eligible for NRHP listing. The portions of site CA-SBR-3054H and newly recorded site CA-SBR-10,137H that lie within the APE are presumed eligible for NRHP listing.

CA-SBR-1910H: This trinomial designates the historic UPRR route between Daggett, California, and the California-Nevada state line near Primm, Nevada.

The site was recorded in 1976 by the BLM California Desert Project, which filed an Archaeological Site Survey Record (ASSR) and a Historic Site Survey Form (HSSF). Neither the ASSR nor the HSSF provides any detailed description of the site as a physical entity, or of the individual elements comprising it. The ASSR defines the site as "Union Pacific Rail Road tracks (still in use)" and the "San Pedro, Los Angeles, and Salt Lake Railroad (Salt Lake Route) built through area [in] 1904." In the HSSF, the site type is identified as "Railroad" with features described as "railroad tracks from Union Pacific Railroad (San Pedro, Los Angeles, and Salt Lake Railroad)." The HSSF also contains a general summary and discussion of the route's history, referenced to Myrick (1963).

As a result of the present study, the portion of site CA-SBR-1910H within the APE can be described in considerable detail. The existing tracks are of three types, including mainline, sidings, and house or back track (J.D. Powell, personal communications: 3-8-00 to Steven Briggs; 3-30-00 to Dave Hanna). The mainline carries through traffic, which at the present time averages 35 freight trains daily. It is comprised of heavy rails and wooden ties, and is of modern construction. Sidings are track sections, built of fairly heavy rails on wooden ties, that are oriented parallel to the mainline and used for the temporary parking of some trains to allow through passage for others. The project area contains five sidings, which are located at Cima, Chase, Elora, Dawes, and Hayden. Most or all of the sidings have been repositioned, and occasionally reconstructed with newer materials, through time. The house or back tracks (setout tracks), which have lighter rails and wooden ties, consist of relatively short sections that are oriented parallel to each siding, and are used for the temporary storage of railroad cars requiring repairs. A few of the rails bear maker marks and dates, as early as 1903 and 1904. These

relatively old rails may have been used in the original construction, but several sections have since been repositioned and/or reconstructed with newer materials.

The existing tracks rest upon a large, manmade, earthen berm or embankment. Much of this structure dates to early stages in UPRR history. However, portions have been reconstructed through time, and in places the alignment has been modified. Within the project area, the embankment contains 40 openings to accommodate the passage of water in intermittent drainages. These openings correspond to the 26 existing bridges that will be widened to the east, and the 14 existing culverts that would have east-end wall modifications added.

Several of the bridges and culverts bear date marks, usually impressed in the original concrete elements. Reconstruction is evidenced by the fact that one of the 17 bridges bearing dates is marked 1925, three are marked 1926, six are marked 1928, and seven are marked 1929. Similarly, of the 15 culverts bearing dates, three are marked 1925, one is marked 1926, eight are marked 1928, and three are marked 1929.

The bridge decks reveal more recent periods of reconstruction, of which approximately half are modern concrete replacements set atop the earlier concrete supports. In one instance, both the deck and supports were replaced in very recent times. It is thought that many of the bridge deck replacements date to 1983-84, although some may be up to about two decades older.

The most recent large-scale construction along the railroad was undertaken in 1983-84. Large quantities of fill were placed on the east side of the original embankment, which doubled the width and provided a base for the currently proposed project. At the same time, concrete additions were made to the east side of each culvert, so that only wing walls and similar protective elements remain to be added by the present project. Significant grading was also undertaken in conjunction with the 1983-84 construction, on both sides of the embankment and generally as wide as the right-of-way limits.

Current records at California's Office of Historic Preservation (OHP) indicate that site CA-SBR-1910H has never been evaluated as to eligibility for listing in the NRHP. However, it can be evaluated here with reference to the evaluation criteria provided at 36 CFR 60.4.

The within-APE portion of site CA-SBR-1910H illustrates Theme 7 (Association with Railroad History) in that it is "associated with events that have made a significant contribution to the broad patterns of our history." This resource's ability to illustrate the theme is supported by the setting, which has remained virtually unchanged through time, and by a general integrity of location, despite minor realignments since the original railbed was constructed.

However, the number, extent, and nature of modifications to the embankment, tracks, culverts, and bridges within the past 50 years have removed or significantly altered almost all potentially historic physical components of site CA-SBR-1910H within the APE. Accordingly, the site must be said to lack any substantial integrity of design, materials, and workmanship. Integrity of feeling and association are essentially inapplicable to the railway, which as a functioning modern facility, owes its present conformation to a long term historical process of frequent reconstruction and reconfiguration.

For the reasons indicated in the above paragraph, the portion of site CA-SBR-1910H lying within the APE is deemed ineligible for the NRHP. This portion of the site is, therefore, not considered to be an historic property.

***CA-SBR-3054H**:* This trinomial designates the town of Cima, which is known today as a small community and occasional stop on the UPRR line.

The site was recorded in 1977 by the BLM California Desert Project, as reflected by an ASSR and an HSSF. The ASSR describes the site as "1904 railroad hamlet with wye track, [and a] 1920 town with a boarding house, cabins, a store and a post office." The HSSF identifies the site as a railroad town, and indicates the presence of a "store, post office, etc."

The HSSF also contains a general summary and discussion of the route's history, referenced to Bard (1972), Gudde (1949), and Myrick (1963), which states:

Around 1920 the town consisted of a boarding house (with cabins made from railroad ties), a store and a post office. The town's basic function was to serve as a railroad siding and as a commercial center for ranchers and miners in the vicinity (Bard 1972:84). The town has a wye (a Y-shaped track) so the helper engines could turn around and return to Kelso.

In addition, the HSSF cites Cima as "a typical example of a railroad siding becoming the nucleus of a settlement." The store and post office are noted as having been replaced by a new building in 1962.

As a result of the present study, a more detailed picture can be presented of the portion of site CA-SBR-3054H that exists within the APE. Within a small, central area between Kelso-Cima Road and the west-side embankment footing (i.e., northwest of the tracks), there is a low-density scatter of twentieth century refuse, of which most is over 50 years old. Adjacent to the east-side embankment footing (i.e., southeast of the tracks) and defining the site's southwestern limit, there is a 600- by 250-foot area that contains ten features and a dense refuse scatter comprised mostly of material over 50 years old. This area's long axis parallels the track, and each of the ten features is oriented squarely with respect to the same axis.

The features are two concrete foundation slabs tied together by a section of sidewalk, a concrete foundation slab with remnants of a brick-and-concrete chimney, a concrete foundation slab with modern PVC pipe; a concrete foundation slab with a recent metal pipe in its center, three other foundation slabs (one of them partly disturbed), two sets of four concrete footings arranged in a square, and a standing water tower (steel tank on steel frame tower). The refuse scatter continues northeast of this feature-rich area, but at considerably lower density, for about 925 additional feet and at a width extending only about 30 to 50 feet out from the east-side embankment footing.

These features are clearly associated with Cima's history as a railroad hamlet and regional economic center. The foundation slabs most likely once supported UPRR-built worker housing, some of which is known to have seen continued use from the early 1900s until recent times. The large majority of refuse present within the APE is associated with the town's and the railroad's history, and the denser portion of the scatter may contain distinct trash features that could be directly associated with individual concrete foundations.

Current records at the California OHP indicate that site CA-SBR-3054H has never been evaluated as to eligibility for listing in the NRHP. The portion that lies within the APE can be evaluated here with reference to the evaluation criteria provided at 36 CFR 60.4.

The portion of site CA-SBR-3054H that lies within the APE is best addressed as an archaeological resource. In that context, its integrity appears adequate to suggest that scientific

study of the cultural materials present would be likely to yield information relating to Theme 5 (Historic Land Use Patterns) and Theme 6 (Historic Cultural and Ethnic Identification). This is true of the refuse and foundations, alike, and both types of remains reflect Theme 7 (Association with Railroad History). In addition, the foundations and sidewalk reflect Theme 8 (Embodiment of Distinctive Characteristics) in ways that can readily illustrate UPRR's profound role in helping shape social, cultural, economic, and political history within the Mojave Desert.

It is recommended here that, for the reasons indicated in the preceding paragraph, the portion of site CA-SBR-3054H lying within the APE should be presumed eligible for the NRHP and considered an historic property.

CA-SBR-10,137H: This site coincides with the historic location of Hayden, a railroad siding and hamlet associated with the early twentieth century San Pedro, Los Angeles, and Salt Lake Railroad, which later became UPRR's Salt Lake Route. First observed during the 1999 survey, the site is now known to be restricted to the west side of the APE (northwest of the tracks).

A very light scatter of refuse and three structural features were identified between the west-side embankment footing and the right-of-way limit, for a length of about 900 feet paralleling the tracks. No outer site boundary has been mapped, as the refuse scatter continues for an unknown distance beyond the right-of-way limit. The features are an 80- by 25-foot concrete foundation slab, a 34- by 28-foot concrete foundation slab, and an enigmatic wooden construction that extends beneath the ground surface. The refuse is of early twentieth century date, and consists of bricks, lumber, white glazed ceramics, miscellaneous metal scraps, and purple, aqua, and white glass fragments. The surface of the site is partially obscured by mechanically disturbed sediments, which appear likely to be imported fill, but undisturbed cultural materials may exist beneath the surface layer.

Too little is known about this site to allow a fully rigorous evaluation of its NRHP eligibility. Without test excavation, neither the possible existence of subsurface cultural deposits nor the seriousness of past mechanical disturbance can be assessed. However, the same conditions and potentials might also be present here as were noted in connection with site CA-SBR-3054H. The site is best addressed as an archaeological resource, with possible scientific value relative to Themes 5, 6, 7, and 8. It is recommended that, for present purposes, the portion of this site that lies within the APE be presumed eligible for the NRHP and treated as an historic property.

3.11 AESTHETICS

The night sky of the Preserve offers visitors relatively undisturbed stargazing opportunities. While the area is mostly unaffected by artificial light reflection, I-15 and I-40 and lights from the communities of Baker, Primm, and Laughlin are having a noticeable effect on the night sky.

The proposed project is entirely within UPRR right-of-way. This area has an existing railroad track, maintenance road, and appurtenances related to the operation of the railroad (i.e., sidings, signals). During desert tortoise surveys conducted in July 1999, several areas along the proposed project area were noted as being littered with trash (i.e., cardboard, boxes, bottles, cans).

3.12 RECREATION

The Preserve provides recreational opportunities for people from all over the world. The Preserve is readily accessible due to its close proximity to Los Angeles and Las Vegas via major

interstate highways. Recreational opportunities include exploring sand dunes, cultural sites, mountain ranges, volcanic cinder cones, and lava flows. Visitation to the Preserve is highest between October and May, and is concentrated primarily on the weekends (NPS 2000). Most recreational use includes sightseeing and driving, but the diverse landscape of the Mojave Desert offers opportunities for hunting, nature study, rock climbing, mountain biking, hiking, and driving on designated roads with street-legal off-highway vehicles. Recreation in the vicinity of the proposed project area includes off-highway vehicle use and a designated non-motorized vehicle use area east of the UPRR tracks.

3.13 PUBLIC SERVICES AND UTILITIES

Few public utilities are present within the project area. The utilities are concentrated in the Kelso and Cima areas and include both above and underground services. They include water, sanitary sewer, telephone lines, and electric service. A UPRR communication and power line runs parallel to the existing tracks within the right-of-way for the entire length of the project as does underground telephone lines. There are several instances of a utility crossing the tracks both underground and overhead. Again, these are mostly concentrated at the Kelso area with some occurrences at Cima. In all cases, the affected public utility has been contacted by UPRR and coordinated with regarding utility locations.

3.14 SOCIOECONOMICS

The proposed project traverses through the County of San Bernardino, including the unincorporated cities of Kelso and Cima.

Over 75 percent of the communities in the northern desert of the County of San Bernardino are unincorporated. Per capita income of this area is estimated at $12,000 (NPS, 1999). Much of the County of San Bernardino is managed by federal agencies, including the BLM, NPS, and Department of Defense. Within the Preserve, there is a population of seasonal and permanent residents primarily residing outside the proposed project area in Lanfair, Pinto, and Round valleys. Most of the residents living in the Preserve full time are retired or self-employed. An estimated 20 to 25 full-time residents are ranchers, miners, or work for UPRR or Castle Mountain Mine (NPS 2000).

Within the project corridor, a small community of less than 30 residents occurs at Kelso. These residents are all UPRR and NPS employees. Impacts to the community are considered temporary, as no new permanent facilities will be constructed adjacent to the existing community. Minor impacts resulting from increased traffic during construction activities are expected.

The Cima Store, located in Cima, is the only facility-based commercial operation in the Preserve. This store primarily serves travelers along Kelso-Cima Road but is also a post office.